Biological Activities V-8

9 Nov 55

Date	log	Type Tow	Fath. Depth
9 Nov		1025 Box-1	675
10 Nov		~~1958 Box-2~~	160
10 Nov		1958 PLK-1	250
12 Nov		0918 EBTOC-1	2710
13 Nov		PLK-2	162
14 Nov		lost Nets ~~EBTOC-2~~	2630
17 Nov		1800 PLK-3	250
23 Nov	185.52	2102 PLK-4	250
25 Nov	297.94	1903 PLK-5	250
26 Nov	331.61	0131 PLK-6	250
26 Nov	399.20	0925 PLK-7	1000?
27 Nov	450.—	0215 PLK-8	250
27 Nov	515.11	1826 PLK-9	250
28 Nov	688.24	1634 PLK-10	250
29 Nov		2420 PLK-11	250
29 Nov	806.26	1705 PLK-12	250
30 Nov	974.06	2030 PLK-13	250
1 Dec	cove 8	EBTOC-2	1865
1 Dec	1089.10	1100 PLK-14	250
2 Dec	outside canal	0630 PLK-15	surface
6 Dec	1231.64	0933 Box-3	34
7 Dec	1405.20	0630 PLK-16	250
8 Dec	1524.39	0725 PLK-17	250
9 Dec	1660.77	1223 PLK-18	250
9 Dec	1660.77	1840 PLK-19	250
10 Dec	1775.33	1555 PLK-20	250
10 Dec	1775.33	0955 Box-4	680

Date	log	Type Tow	Fath Depth
13 Dec	2115.41	2070 PLK-21	250
14 Dec	2213.58	0840 PLK-22	250
15 Dec	2407.57	1220 EBTOC-3	634
17 Dec	2578.68	2407 PLK-23	250
17 Dec	2645.7	1310 PLK-24	250
18 Dec	2791.40	1930 PLK-25	250
20 Dec	2971.96	0900 PLK-26	250
20 Dec	2972.55	1255 PLK-27	1000 *
21 Dec	3085.89	1250 PLK-28	250
22 Dec	3162.47	0635 PLK-29	1000 *
23 Dec	3329.07	1430 PLK-30	250
23 Dec	3373.13	2316 PLK-31	250
24 Dec	3434.88	1219 PLK-32	250
24 Dec	3497.09	2323 PLK-33	250
25 Dec	3551.00	1200 PLK-34	500 *
26 Dec	3669.13	0955 PLK-35	437 *
27 Dec	3755.58	0145 PLK-36	1000 *
31 Dec	3881.35	0410 PLK-37	250
1 Jan 56	4031.73	1454 PLK-38	250
2 Jan 56	4082.51 ~~4082.51~~	0100 PLK-39	250
3 Jan 56		1922 PLK-40	250
5 Jan 56	4461.68	0936 PLK-41	250
7 Jan 56	4714.15	1849 PLK 42	250
8 Jan 56	4754.36	0440 PLK-43	500
9 Jan 56	4811.58	2401 PLK-44	250

Date	log	Type tow	Fath depth
9 Nov		Box-1	675
10 Nov		Box-2	160
10 Nov		PLK-1	250
12 Nov		EBTOC-1	2710
13 Nov		PLK-2	162
14 Nov		EBTOC-2	2630
17 Nov		PLK-3	250
23 Nov	185.52	PLK-4	250
25 Nov	297.94	PLK-5	250
26 Nov	331.61	PLK-6	250
26 Nov.	399.20	PLK-7	1000?
27 Nov.	450.	PLK-8	250
27 Nov	515.11	PLK-9	250
28 Nov	688.24	PLK-10	250
29 Nov		PLK-11	250
29 Nov	806.26	PLK-12	250
30 Nov	974.06	PLK-13	250
1 Dec	core 8	EBTOC-3	1865
1 Dec	1089.10	PLK-14	250
2 Dec	outside canal	PLK-15	SURFACE
6 Dec	1231.64	Box-3	34
7 Dec	1405.20	PLK-16	250
8 Dec	1524.39	PLK-17	250
9 Dec	1660.77	PLK-18	250
9 Dec	1660.77	PLK-19	250
10 Dec	1775.33	PLK-20	250
10 Dec	1775.33	Box-4	680

date	log	Type tow	Fath Depth
13 Dec	2115.41	PLK-21	250
14 Dec	2213.58	PLK-22	250
15 Dec	2407.57	EBTOC-4	634
17 Dec	2578.68	PLK-23	250
17 Dec	2645.7-	PLK-24	250
18 Dec	2791.40	PLK-25	250
20 Dec	2971.96	PLK-26	250
20 Dec	2972.55	PLK-27	1000
21 Dec	3085.89	PLK-28	250
22 Dec	3162.47	PLK-29	1000
23 Dec	3329.07	PLK-30	250
23 Dec	3373.13	PLK-31	250
24 Dec	3434.88	PLK-32	250
24 Dec	3497.09	PLK-33	250
25 Dec	3551.00	PLK-34	500
26 Dec	3669.13	PLK-35	437
27 Dec	off cuba	PLK-36	1000

V-8 1955

Name..... No..... Experiment No.....

Instructor..... Date.....

CUB 53

Date	Time	Lat.	N	Long	W	Tow	Depth	Log		
9 Nov.	1010 0025	22	38.5	73	40.3	Box 1	675			
10 Nov.	2001 1958	20	01.4	70	39.9	PLK 1	250			
12 Nov.	0818 0918	20	32.2	68	28.1	EBTOC 1	2710			
13 Nov. ☆						PLK 2	162			
17 Nov.	1724 1800	17	05.0	68	59.0	PLK 3	250			
23 Nov.	2037 2102	16	48.2	70	19.0	PLK 4	250			
25 Nov.	2016 1903	17	05.8	71	37.0	PLK 5	250			
26 Nov. 0125	0131	16	36.2	72	09.6	PLK 6	250			
26 Nov. 0910	0925	15	45.4	72	45.0	PLK 7	1000			
27 Nov. 0200	0215	15	09.5	73	25.8	PLK 8	250			
27 Nov. 1902	1826	14	22.6	74	11.4	PLK 9	250	29th 0055	11	53.6
28 Nov. 1627	1634	11	54.7	75	42.6	PLK 10	250	28 Nov. 2420	25	49.1
29 Nov. 30 Nov. 0113	2420	11	32.6	75	54.5	PLK 11	250			
29 Nov. 1623	1705	11	33.9	75	43.3	PLK 12	250			
30 Nov. 2018	2030	12	23.3	77	45.5	PLK 13	250			
1 Dec. 1200	1340	11	16.6	79	14.4	EBTOC 2	1865			
1 Dec. 1057	1100	11	16.8	79	13.1	PLK 14	250			
2 Dec	0530	9	34.4	79	46.4	PLK 15	Surface	☆		
6 Dec. 0850	0933	9	24.8	79	52.2	Box 2	34			
7 Dec. 0614	0630	11	23.2	77	37.1	PLK 16	250			
8 Dec. 0649	0725	12	57.2	77	22.0	PLK 17	250			
9 Dec. 1200	1223	14	46.0	78	09.3	PLK 18	250			
9 Dec. 1806	1840	14	46.0	78	12.0	PLK 19	250			
10 Dec. 1545	1555	16	16.7	79	13.9	PLK 20	250			
10 Dec. 0950	0955	16	10.5	79	09.7	Box 3	680			
13 Dec. 2030	2030	17	28.3	76	21.8	PLK 21	250			
14 Dec. 0831	0840	16	05.2	76	11.3	PLK 22	250			
15 Dec. 1215	1220	16	59.1	79	07.9	EBTOC 3	634			
17 Dec 2340	2407	18	05.9	80	23.0	PLK 23	250			
17 Dec. 1200	1210	18	13.1	79	33.9	PLK 24	250			
18 Dec. 1935	1930	18	42.8	79	43.4	PLK 25	250			
20 Dec. 0850	0900	19	04.0	80	47.4	PLK 26	250			
20 Dec. 1200	1255	19	04.0	80	48.0	PLK 27	1000	✓		
21 Dec 1240	1250	19	13.1	81	23.7	PLK 28	250			
22 Dec 0600	0635	19	46.9	80	40.7	PLK 29	1000			
23 Dec 1200	1430	19	13.0	79	26.2	PLK 30	250			
23 Dec. 2312	2316	19	13.0	78	54.7	PLK 31	250	✓		
24 Dec 1200	1219	19	10.6	77	56.2	PLK 32	250			
24 Dec 2313	2323	19	23.3	77	14.9	PLK 33	250	✓		
25 Dec 1200	1200	19	14.0	76	51.2	PLK 34	500			
26 Dec 0612	0955	19	37.5	76	18.0	PLK 35	437			
27 Dec 0148	0145	19	49.6	75	36.8	PLK 36	1000			
31 Dec 0352	0410	18	24.0	75	11.0	PLK 37	250			
1 Jan. 1200	1454	17	33.9	73	22.1	PLK 38	250			

date	time	Lat	N	Long	W	Tow	Depth	Log
2 Jan 0150	0100	17	31.5	72	31.6	PLK 39	250	
3 Jan 1742	1922	17	46.0	70	05.0	PLK 40	250	
5 Jan 0830	0936	19	10.9	67	06.0	PLK 41	250	
7 Jan 1833	1849	20	32.5	64	52.0	PLK 42	250	
8 Jan 0425	0440	19	57.1	65	07.5	PLK 43	300	
9 Jan ☆	2401					PLK 44	250	

V 8 - Plankton Samples 1/2 m 9/27/56

Recalculation of Vol. H_2O filtered A. Bé

#44 Av. W∡ = 30° (= average wire length) (AWL)
Graph shows 8.5 m^3/min. at 30° W∡ (G)
Length of tow 36 mins. (LT)
Vol. H_2O filtered (VHF) = 36 × 8.5 = 320 m^3 (VHF)
d = cos 37 × 421 = 340 m

#43 AWL = 10°
G. = 5.4 m^3/min at 10°
LT = 55 min.
VHF = 55 × 5.4 = 296 m^3

d = cos 11° × 880 m = 860 m
.98
480 Fm = 880 m.

#42 AWL = 24°
G = 7.7 m^3/min at 24° ∡
LT = 80 min.
VHF = 80 × 7.7 = 616 m^3

d = cos 24° × 421 = 385 m.

#41 AWL = 18°
G = ~~153 min~~ 6.7 m^3/min.
LT = 153 min.
VHF = 153 × 6.7 = 1020 m^3

d = cos. 18 × 421 = 400 m
.95

#40 AWL = 40°
G = 10.0 m^3/min
LT = 43 min
VHF = 10.0 × 43 = 430 m^3

d = cos. 40 × 421 = 325 m

#39 AWL = 34°
G = 9.1 m^3/min
LT = 31 min
VHF = 31 × 91 = 282 m^3

d = Cos 34 × 421 = 350 m

#38 AWL = 39°
G = 9.8 m^3/min
LT = 37 min.
VHF = 37 × 9.8 = 363 m^3

d = Cos 39 × 421 = 330 m
'79

#37 AWL = 25°
G = 7.8 m^3/min.
LT = 22 min
VHF = 22 × 7.8 = 171 m^3

d = Cos. 25 × 421 = 385 m

#36 AWL = 0°
max. depth 1830 m. ∴ total tow = 2 × 1830 m = 3660 m
VHF = 3660 × $\frac{1}{4}$ m^2 (circumference of 1/2 m. net) = 915 m^3

d = 1830 m

#35 AWL = 31°
G = 8.6 m^3/min
LT = 65 min
VHF = 65 × 8.6 = 560 m^3

d = Cos 31 × 800 = 690 m.

#34 AWL = 43°
G = 10.2 m^3/min.
LT = 143 min
VHF = 143 × 10.2 = 1460 m^3

d = Cos 43 × 915 = 670 m

#33 AWL = 31°
G = 8.6 m³/min
LT = 16 min
VHF = 16 × 8.6 = 138 m³

d = cos 31 × 421 = 360 m

#32 AWL = 18°
G = 6.7 m³/min
LT = 74 min
VHF = 74 × 6.7 = 495 m³

d = cos 18 × 421 = 400 m.

#31 AWL = 20°
G = 7 m³/min
LT = 31 min
VHF = 31 × 7 = 217 m³

d = cos 20 × 421 = 400 m

#30 AWL = 17°
G = 6.5 m³/min
LT = 40 min
VHF = 40 × 6.5 = 260 m³

d = cos 17 × 421 = 400 m

#29 AWL = 40°
G = 10 m³/min.
LT = 382 min
VHF = 382 × 10 = 3820 m³

d = cos 40 × 1790 = 1400 m.

#28 AWL = 15°
G = 6.2 m³/min
LT = 29 min
VHF = 29 × 6.2 = 180 m³

d = cos 15 × 421 = 410 m

#27 AWL = 45°

G = 10.4 m³/min

LT = 237

VHF = 237 × 10.4 = 2460 m³

d = cos 45 × 1790 = 1270 m.

#26 AWL = 30°

G = 8.5

LT = 34

VHF = 34 × 8.5 = 289 m³

d = cos 30 × 421 = 365 m

#25 AWL = 25°

G = 7.8

LT = 36

VHF = ~~280~~ 36 × 7.8 = 280 m³

d = cos 25 × 421 = 380 m

#24 AWL = 24°

G = 7.7

LT = 40

VHF = 40 × 7.7 = 308 m³

d = cos 24 × 421 = 380 m

#23 AWL = 25°

G = 7.8

LT = 28

VHF = 28 × 7.8 = 218 m³

d = cos 25 × 421 = 380 m

#22 AWL = 28°

G = 8.3

LT = 24

VHF = 24 × 8.3 = 199 m³

d = cos 28 × 421 = 370 m

#21 AWL = 18°

G = 6.7

LT = 91

VHF = 91 × 6.7 = 610 m³

d = cos. 18° × 421 = 400 m

#20 AWL = 45°

G = 10.4

LT = 49

VHF = 49 × 10.4 = 510 m³

d = cos. 45 × 421 = 300 m

#19 AWL = 27°

G = 8.2

LT = 45

VHF = 45 × 8.2 = 368 m³

d = cos. 27 × 421 = 375 m

#18 AWL = 30°

G = 8.5

LT = 33

VHF = 33 × 8.5 = 280 m³

d = cos 30 × 421 = 365 m

#17 AWL = 25°

G = 7.8

LT = 29 min

VHF = 29 × 7.8 = 226 m³

d = cos. 25 × 421 = 380 m

#16 AWL = 20°

G = 7.0

LT = 30

VHF = 210 m³

d = cos 20 × 421 = 400 m

#15 —— surface ——

#14 AWL = 16°
G = 6.4
LT = 27
VHF = 27 × 6.4 = 173 m³

d = cos. 16 × 421 = 405 m

#13 AWL = 22°
G = 7.3
LT = 28
VHF = 28 × 7.3 = 204 m³

d = cos. 22 × 421 = 390 m

#12 AWL = 27°
G = 8.1
LT = 26
VHF = 26 × 8.1 = 210 m³

d = cos 27 × 421 = 380 m

#11 AWL = 26°
G = 8.0
LT = 26
VHF = 26 × 8.0 = 168 m³

d = cos. 26 × 421 = 380 m

#10 AWL = 30°
G = 8.5
LT = 27
VHF = 27 × 8.5 = 229 m³

d = cos 30 × 421 = 365 m

#9 ~~AWL = 22° 1/2 m. net~~
~~G = 7.3~~
~~LT =~~
~~VHF =~~

#8 AWL = 60°
G = 11.6
LT = 26
VHF = 26 × 11.6 = 301 m³

d = cos 60 × 4 × 1 = 210 m

#7 AWL = 15°
G = 6.2
LT = 81 min
VHF = 81 × 6.2 = 500 m³

d = cos 15 × 880 = 850 m

#6 AWL = 38°
G = 9.7
LT = 26
VHF = 26 × 9.7 = 252 m³

d = cos 38 × 4 × 1 = 330 m

#5 ~~AWL = 27°~~ No 1/2 m. net tow
~~G = 8.1~~
~~LT =~~
~~VHF =~~

#4 No 1/2 m. tow

#3. AWL = 45°

G = 10.4

LT = 155

VHF = 155 × 10.4 = 1620 m³

d = 1.55 × 45 = 1770 m

#2 AWL = 40° Total tow = 2 × 300 m = 600 m.

~~G =~~

VHF = 600 × $\frac{1}{4}$ m² = 150 m³

Depth = ± 230 m.

d = 230 m

#1 AWL = ~~67~~ 50°

G = 10.8

LT = 31

VHF = 31 × 10.8 = 335 m³

d = 1.5 × 1.8 × 31 = 181 m

COMPUTATION BOOK

NAME	Number
Biological Log	

Course Vema 8

Used from October 30 1955, to January 9 1956.

HARVARD COOPERATIVE SOCIETY
1400 Mass. Ave., Cambridge, Mass.
40 Mass. Ave., Cambridge, Mass

October 30, 1955

Sighted 2 unidentified birds flying together near ships at 1050. Were about size and build of a gull and flew like a gull, but were black all over except throat and breast which were grey. There was a black band across the neck.

Spent most of day getting C-14 apparatus working.

Brief resume of trips up to Nov. 8, 1955.

Left Todd's Shipyard, Saturday at 1130, one and one-half hours late. Spent sat. cleaning ship's wet lab and securing all scientific gear. Worked on nets, trawls, and the bottom grab on way to Bermuda arriving there Wed. Nov. 2. Loaded explosives all morning and left at 1600 that afternoon. Continued to work on the EBTOC and nets on way to Nassau. Arrived Good Providence Island and Nassau Sunday afternoon Nov. 6. Went ashore Sunday night, spent all Monday checking operation of EBTOC in shallow harbor waters from eight foot skiff. Made 1/2 M net tow for 1/2 hour from skiff in harbor down to about [redacted] 7 meters depth and one EBTOC tow in about [redacted] 4 meters depth over about 100 yards. The bottom of the harbor had some ~~short~~ eel grass beds but was mostly old ground up coral from dredging. The eel grass was short (6" long) and appeared to be in a sickly condition as it was covered with marine growth and much of it was brown or yellow. Long spined, purple sea urchins were dominant and short-spined light blue-grey urchins (Strongylocentrotus!) common. Club spined urchins rare, hair corals & other types common close to Hog Island shore. A large (6" diameter, 10" high) blue-grey sponge was rare but conspicuous close to Hog Island. The bottom was littered with old conch shells in many places.

Monday afternoon (1700 Nov. 7) we left Nassau Harbor. Tuesday night EBTOC's and spoiled new wire onto storage reel.

Lat N 22 38.5 Long W 79 41.3

November 9, 1955, Wednesday

Bot

Tried out bottom grab on hydraulic winch in morning. Started down at 1025 hit bottom at 1043, wire out 1280 meters, fathometer depth 675 fathoms. Grab reached surface at 1100 with a thimble full of globigerina ooze - all rest washed out.

Average speed of lowering : 70 Meters per minute

Average speed of raising : 75 meters per minute

Speed of lowering was actually greater, but made several stops for various adjustments

675 fathoms X 1.828 = 1230 meters
wire out = 1280 meters or 50 M difference?

In afternoon got all of old ~~hydraulic~~ conductor wire off hydraulic winch and onto a wooden spool by hand with much sweating by all.

Ran new conductor cable onto winch after supper.

PIK 1 — Nov 10, 1955

10 Nov 55 Thur

~~Wed~~ ~~November 11, 1955~~ Friday

SERIAL NO. 1582

	Lat	Long
20	1.4	78 39.9

Bot 2

Tried out bottom grab on side of seamount in about 160 fathoms. Release arm did not spring but lids did. Apparently the grab hit sideways and did not trip.

Lowered it again in about 500 fathoms with good wide angle. Jaws tripped O.K. but no ~~bottom~~ ~~sa~~ sample when brought on deck.

In evening made our first plankton tow without too much trouble.

Net tow #1, Vema 8.

½ M net in 1958 out 2029 time = 31 mins.

1 M net in 2000 out 2026 time = 26 mins.

Wire L 60 – 2002
62 – 2004
PLK-1 65 – 2006
63 – 2008
64 – 2010 — at depth
60 – 2012
48 – 2014 — start up
30° – 2016 — stopped ascent – Maggy in way
38 – 2018 — resumed ascent
44 – 2020
40 – 2022
40 – 2024

Depth 200M = 109 F
Time 1958-2029=31 ½M 2000-2026=26 1M
angle 64°L
Vol H₂O Fil. 1M 1400 m³ ½M ~~1260 m³~~ 18 m³
Drip Vol. 18 ML 1M
16 ML ½M
Trim factor 1M 1.0 ½M .9
1M DV/10²m³ 13 ML ½M DV/10²m³ 19 ML

GK

depth
time 0918 —
angle
Vol H_2O Fd
Dupli Vol

?

November 12, 195 Saturday

68

Attempted first EBTOC haul today.

start down	0918	speed 100 M/min.
	0929	1000 MWO
	0932	Changed speed to 115 M/min. WL 27°
	0934	" " " 125 M/min.
	0937	2000 M WO WL 27°
0948 WL 24° →	0946	3190 M WO
0952 WL 30° →	0950	3500 M WO ma. meter stopped reading
	0954	4000 M WO ma. now 0-14 ma.
	1002	WL 26°
	1005	5000 M WO
	1006	WL 30° 5140 M WO, on bottom?
WL 25°	1011	5300 M WO bathometer reading 2710 Fa.
	1014	spring tension -12
	1014	start up
	1024	let down again
		4940 M WO - wire hung up on bottom?
		4893 " " " " " "
1315 →		4764 " + free

1231 MWO - first kink

At 1014 we started up with 5500 M W O after being at depth for less than two minutes. Due to strain on cable wire began to cut into the spool so began to pay out all wire to rewind the spool under tension. As hauling in proceeded, the winch began to operate peculiarly - first evidenced by the ~~whistle~~ whistle of the air relief valve. Both two fuses were blown and the electric motor began to run away but apparently no damage done. At times the air pressure gauge became filled with oil or hydraulic fluid. With 6050 M W O or low haul came up and the winch went completely out. It then became apparent that the spindle shaft of the winch were moving apart under the strain and jamming on the brake. Last 6050 M of wire brought in by use of handy billy. EBTOC retrieved O.K. slightly damaged but not serious. meter in good shape, electrical connections still good, battery O.K., second release had gone off and each

1/2 M net had about one quart of sediment in cod end.
Screen nets were essentially empty.
Dumbell dumps held very well and did no apparent damage to the net
All were finally on board at 1730.

SERIAL NO. 2906

November 13, 1955 Sunday

P2K-2

Took 1/2 M net tow on B.T. while coming. about 300 M wire out with an angle of about 40°. Cut wire at about 200 meter. Time about 1430.

Rest of day spent working on hydro ~~wire~~ winch and cleaning EBTDC rodamers.

Disp. Vol. 14 ML

19°32'N 0E.8 7.5'W at 14:20

Nov. 14, 1955

½" wire

EBTOC start down 1353, 30 Fath/min, wire L 10°
1410 2630 fath water depth = 4810 meters
1413 600 fath out
1415 36 fath/min.
1420 800 fath out

Fathometer depth is 1.5% low, meter wheel is 9.5% low ∴ add 10% meter wheel wire out to estimate bottom.

2630
+ 260 = 10%
2890 fath.

1442 w L 15°, (upper 2.50 fath) need 10 more fath for depth.

2890
+ 10
2900 if straight line to bottom
∴ let out 3000 fathoms.

1445, 35 fath/min, 1700 fath out
1504 – 40 fath/min descent, 2350 fath w.o.
1506 – 2621 fathoms, bottom depth
1513 – 36 fath/min; 2650 fath out
1524 – 3000 fath out by meter wheel
1530 – fathometer reading 2673 earlier incorrect
1539 – start up
1543 – speed of ascent 12 fath/min.
1553 – spring tension 13–15, oscillating slowly
1600 – fathometer reading 2615 & 2675 probably right (bottom present)
1605 – lead hung low weak, descent stopped, we think a gear is gone

2621
262
2883 fath.

rain squalls during night

Nov. 15, 55 next page

November 15, 1955

0915 started diesel after replacing main winch shaft and grinding down ring gear teeth.
0935 got twinkle entry wire but one kink at 2731 fathom meter wheel reading
0936 started in, tension 12-15 osc. gently, winding speed 16 fathoms/min.

Hot sunny day, calm with gentle breeze
0946 ship took a good roll and tension went down to 8 then up to 16.
1013 16 fath/min ascent, 1940 fath still out
1045 36 fath/min ascent, 900 fath still out
1140 all on board, all of EBTOC gone except the two lead pipes and the release. 14 fathoms of wire badly kinked and cut off. Should have had swivel on EBTOC bridle but sensor stiffener should not have come off - butt bagging not strong enough.

Sept. 16, 1955

Put into Mayaguez, Puerto Rico at 1130 for water. Left at 1700. No time for EBD tow or platform work.

Hydro unit disassembled and apparently the ice spindle shaft stretched about ½ inch.

Lat. N Long W
17 50 68 55.0

November 17, 1955 (Cont. next page)

PLK-3 0-250 fathoms and out net tow on ½ inch screen

½M net in: 1800 out 1855

1M net in: 1803 out 1853

1803 – 20°
1804 – 15°
1807 – 25°
1811 – 30°
1813 – 33°
1817 – 30°
1820 – 32°
1825 – 33°
1828 – 33° down
1830 – 35° start up
1835 – 37°
1840 – 40°
1848 – 40°

Seismic station, drifting in trough

Depth 384 M = 210 F
time 1800-1855: 55 ± m
angle 33° L
Vol H_2O Est.
Drip Vol. 94 ML 1M

1M 1803-1853 = 50 1M

48 ML ½ M

?

M next page – two tows [illegible]

[illegible]

and (note [illegible] they [illegible] [illegible] out.)

Nov 17, 1955 (Cont.)

stU 3

0–1000 fath. wire out net tow on 1/2" wire

1/2 M net in 1908 out ~~2100~~ 2143 approx.

1 M net in 1912 out – lost

1924 – 30°
1940 – 35° speed up to now same as preceding tow
1947 changed speed to descent of 30 fath / min.

1954 – 35°
2010 – 45°, 1000 fath wire out
2025 – 40°
2043 – start up, 40°, 18 fath / min.
2100 – 45°, 18 fath / min.
2117 – 43°, 19 fath / min.

Wedge on aluminum clamp bent out of position at top, clamp slid down wire to 1/2 M net, snap hook and all of 1 M net gone. One snap hook on 1/2 M net opened out, other held. Considerable wear on edges of Denbeth clamp.

Depth 1294 M = 707 F
Time 1908–2143 = 2135 ½ M 1 M lost
Angle 45° L
Vol H2O Ext. 134.
Dip Vol. ~~94 ML 1 M~~ ½ M 36 ML
Time factor ½ M 5.2 Dropped 35 ML

?

V

OK

Lat N Lon W
16 48.2 70 19.0

23 Nov. (1641N 7019W)

PLK 4 Rough seas + strong wind, log 18552
½ M not used due to inadequate dumbbell clamp.

1M down	2102	
	2107	28°L
	2114	32°L
	2124	34°L
	2130	25°L
+	2140	40°L
	2550	35°L
	2200	45°L
1M up	2216	
½ 1M up	2219	

1M net fastened to end of half inch cable, 100 lb wgt fastened to thimble on same leg from net. Wgt spread thimble and shackle slipped off of thimble. Now shackle wgt fastened to end of cable with large shackle - dry fasten 1M net fastened to same shackle. Works fine.

Depth
Time 2102-2219=1:22 1M.
Angle 40%
Vol. 420 Fil 1M 3780 M³
Dip Vol 125 ML
Time/meter 1M 2.7 ✓
to 34/2.7 M³ 33 ML

bottom length 1 min

Depth 407M = 222F
time 1903-1952 = 49M
angle 27°L
Vol. H2O fil. 2240 m³
Disp. Vol. 40 ML
time factor 1M 1.6 ~~±.4~~
1M DV/1000m³ 18 ML

✓

Depth 360M = 193F
time 0131-0211 = 40M 0139-0205 = 26½M
angle 38°L
Vol. H2O Fil 1M 1820 m³ ±M 1260 m³ (18 m³)
Disp. Vol. 44 ML 1M 16 ML ½M
time factor 1M 1.3 ±M .9
1M DV/1000m³ 24 ML ±DV/1000m³ 39 ML

✓

LT N. 17 58 SERIAL NO. 1583 71 39.0

25 Nov. log 29794 #1
PLK-5-

1M down		1903	23°L
	8 Fath/min	1910	31°L
135F	11 Fath/min	1919	25°L
	210 Fath	1925	27°L
	250F at depth	1930	22°L
10F/min	start up	1932	20°L
	14F/min	1940	30°L
	±	1948	20°L
	1 surface	1952	

no comment.

SERIAL NO. 1584

26 Nov. #2 82.1°F surf BT V8-2 #6
PLK-5-

Now using ½ meter net using Bieri's small hose stop with two shackles - one above one below. net located 20 Fath above 1M net. left 1M net on bottom of cable cross so not trust shackle arrangement for Bieri clamp.

			LT N	LG W
1M down	0131			
½M down	0139	15°L	16 36.2	78 09.6
19F/min	0141			
145 Fath	0145	30°L		
	0149	40°L		
at depth 250F	0151	38°L		
start up	0153			
19 Fath/min	0155	45°L		
170F	0157	41°L		
	0202	33°L		
½M up	0205			
1M up	0211			

good catch

Shackles on Bieri's clamp seem to work OK. Will continue this arrangement.

Lat N 15 45.4 Long W 72 45.0

26 NOV. light breeze, mild sea log 39920
PLK-7 - BT # 7
Surf temp 82.2°F

1M down 0925
½M down 0936

916M - 500 Fath 0949
1000 15°L think last net - hanging
1005 ‖ to ships mov, tends
start up 1046
2 F/min 1048 10°L
1052 10°L
1053 20°L
½M up 1057
1M up 1106

everything looked normal, no wear + tear.
think low angle reading due to
no motion forward + calm sea + very
light breeze.

Depth 874 = 477F
Time 0925-1106-1141-1M 0936-1057-1121 ½M
angle 15°L
Vol H2O Fil 1M 4760 m³ ½M 3780 m³ (54)
(3 ML ½M)
Disp Vol 31 ML 1M
time factor 1M 3.4 ½M 2.7
1M Dv/10m³ 6.5 ML ½M Dv/10m³ 24 ML

✓

ok

Lat N Long W
15 9.5 13 25.8

27 Nov. log 450

PLK-8

0 nice time for PLK tow. have just spent the preceding 5 hours alternating in the hell hole with Bob – rewinding hydro wire. almost finished but now have chance for PLK tow
went back to wire winding and finished at 0400.

(extremely tried – which added to hazard + enhanced chances for success + loss of PLK.) were successful and got rare type looking fish.

1M down	0215		
½ M down	0225 ✓	20°L	
20 F/min	0227		
	0230	26°L	
175 Fath	0232	20°L	
	0235	35°L	
	0236	* 60°L	Bring ship into wind + slow down
at depth 250F	0237	60°L	
start up	0241		
21 F/min	0244	* 35°L	OK
20 F/min	0245		
130 Fath	0247	20°L	
½ M up	0251 ✓		
1 M up	0259		

Depth 229 M = 125 F
time 0215-0259-44-1M 0225-2251=26½m
angle 60°L
Vol H2O Fil /M 2100 m³ ½m ~~1260~~ 18 m³
Drip Vol 44 ML 1M 10 ML ½ M
time factor /M 1.5 ½m .9
1M DV/10³ m³ 21 ML ½m DV/10³ m³ 56 ML

✓ OK

Lat N Long W
14 22.6 74° 11.4

27 Nov 55 #2 log 51511 strong wind big waves
PLK-9

1M down	1826		
19 F/min	1835	29°L	17 min
	1836	30°L	
	1840	22°L	
	1841	27°L	
at depth 250 Fath	1843	22°L	
	1845	22°L	
start up 20 F/min	1850	19°L	10 min only
	1853	21°L	speed 200 F ?
	1855	25°L	
1M up	1900		

½ M clump thread strip - for overboard - lower without

Depth 424 M = 232 F
time 1826-1900 = 34 M ~~1835-1855 = 20 M~~
angle 22°L
Vol H_2O Fil 1M 1540 m^3 ~~1M 920 m^3~~
Dip Vol. 37 ML 1M
time factor 1M 1.1
Dip Vol = 4 ML

Lat N Long W
11 54.7 75 42.6

28 Nov. 55 log 68824 mile/sea + wind

SERIAL NO. 1586

PLK-10

1M down	1634	
½ M down	1638 ✓	Al. clamp - Bicri
19 F/min	1640	28°L
	1643	29°L
	1646	30°L
at depth 250 F	1649	30°L
	1651	32°L
20 F/min	1653	30°L
	1656	28°L
	1700	35°L
½ M up	1705 ✓	
1 M up	1710	

Depth 396M = F 216
Time 1634-1710:36-1M 1638-1705:27-½M
Angle 30°L
Vol H2O Fil. 1M 1680 m³ ½M ~~1260 m³~~ 1890 m³
Drip Vol. 3 ~~3~~ mL 1M 16 mL ½M
Time/Interv 1M 1.2 ½M .9
1M Dr/10 cm² = 23 mL ½M Dr/10 cm² = 19 mL

29 Nov. 55 – Attempted to lower "SBox" at 2242. Reached a depth of 3000 M on indicator — actual depth by Fathometer 1513 Fath. Intend to go deeper but time would not allow – (punched station + storm coming)

Box broke surface with some 50 odd meters left. Came to about fast hit side of ship hard and put hole through screen.

All doors were shut but nothing inside – Do not think it hit bottom, paravane door opened & closed prior to hitting ship – all happened too fast –

Next time go much slower when under 100 M to 50.

Arc angle – 43°L

✓

depth 408 M · 222 F
time 1M 1705-1746 = 41 min ½M 26 min
angle 23°L
vol H_2O fil 1M 1960 m^3 ½ ~~1260~~ m^3 18 m^3
Digl. Vol. 72 ML 1M 15 ML ½M
time factor 1M 1.4 ½M .9
1M DV/10^3 m^3 37 ML
½M DV/10^2 m^3 82 ML

Lat N 11 32.6 SERIAL NO. 1587/~~75~~ Long W 75 54.5

29 Nov. 55 PLK-11 – log 68824 – mild sea + wind ~~lat~~

1M down	2420		
½M down	2425 ✓	Al. clamp.	
19 F/min	2426	25°L	
	2430	20°L	
	2433	19°L	
232 Fath	2435	20°L	
depth 250 Fath	2436	26°L	Depth 412 M = 225 F
start up	2440	17°L	time 2420-2456 · 36 1M 2425-2451 · 26½ M
	2443	21°L	angle 26°L
	2445	26°L	vol H_2O fil 1M 1680 m^3 ½M 1260 m^3
	2447	30°L	Dig vol. 74 ML/M 18 ML ½M
½M up	2451 ✓		time factor 1M 1.2 ½M .9
1M up	2456		1M DV/10^3 m^3 14 ML
			½M DV/10^2 m^3 10.0 ML

Time for the day – Very hard to pull bucket back in when bucket not tied.

SERIAL NO. 1588

29 Nov. 55 #2 – log 80626 – sea mild – cloudy day
PLK 12 – Lat N 11 33.9 – Long W 75° 43.3 ✓

1M down	1705		
½M down	1715 ✓		
20 F/min	1717	25°L	Now using angle scale but speedometer does not work
	1722	28°L	
	1724	20°L	
	1726	24°L	
at depth 250 F	1727	27°L	
start up	1730	30°L	
½M up 1741 ✓	1733	34°L	
1M up 1746	1739	40°L	

Failed to record time – had much difficulty getting Al clamp off wire – eventually got it off with wrench in screw.

speedometer not working – had to keep looking over side – + had no watch.

☆ extreme rain – luminescence –

Depth 924 M = 230 F
time 1M 40min ½M 28min
angle 22°L
Vol H₂O Fil 1.2 m³ 18 m³
Drip Vol. 28ML 1M 10ML ½M
time pulse 1.3 1M .9 ½M
1M DV/1.3m³ 15 ML
½M DV/.02 m³ 55 ML

½ no time

Lat N 12 23.3 long W 79 45.5

30 Nov. 55 log 97406 seat wind mild
PLK-13

1M down	2030	
½M down	2037 ✓	
20F/min	2038	
	2039	16°L
	2043	19°L
	2045	15°L
	2047	17°L
250 Fath	2048.5	22°L
start up	2050.5	19°L
	2054	15°L
	2055	14°L

no watch + no meter ? 2105 ✓ ½ up
same as PLK 12 2110 1M up

up – OK

suggestion – make weft 100 lb wgt with a flat surface to keep net in place on deck while rigging for tow "saves tacos".

Depth 434M = 236F
time 1100-1140 - 40 min ½ 27 min.
angle 15°L
Vol H2O Fil 1M 1820 m³ ~~½ 1260 m³~~ 18 m³
Dip Vol. 22 ml - 1M 6 ml ½ M
time factor 1M 1.3 ½ M .9
1M Dr / 1.3 m³ 122 ml
½ M Dr / 10² m³ 33 ml

✓

Depth 1865 F as indicated on Fathometer
time 1340-1715: 3 hrs. 35 min
angle 44°L
Vol H2O Fil.
Dip Vol.

OK

Lat N Long W
11 16.8 79 13.1

1 Dec 55 log 1089.10 rain + wind mild
PLK-14

SERIAL NO. 1590

1M down	1100	
½ M down	1108 ✓	
36M/min	1109	
	1110	24°L
145M		22°L
200M		25°L
300M		24°L
410M		19°L
-457M		16°L
440M		19°L
300M		20°L
130M		25°L

½ up ? 1130 } guess work
½ M up 1140
up OK

EBTOC-2
1 Dec 55 log

→ Core no. 8
Lat N Long W
11 16.6 79 14.4

1865 Fath.

start down 1340 . 28°L slow ahead in large circle to right

	650M		28°L	
	1220M		62°L	
	1520M	1349	54°L	successful tow - it opened and closed. However, bottom of EBTOC not scratched and
	2050M	1358	48°L	
	3492M	1414	35°L	
	4930M	1447	38°L	
stand up	5000M	1504	44°L	below it spent most
	3320M	1537	17°L	of its time up side down
	3010M	1545	23°L	
	2372M	1557	25°L	No samples in screen net

ship at stand still and line vertical out of way up. ½N had some.

up — 1715 all received up from 100 M out to EBTOC - cut off 100 M.

Lat N Long W
9 34.4 79° 46.4
0600

2 Dec 55 Just outside Panama Canal

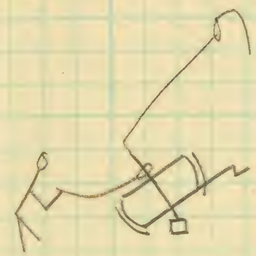
PLK-15

≐ M down for a 15 minute surface tow.
about 6 feet below surface

(water appeared dark green for obvious reasons) — there was green stuff in the water (algae)?

Lat N Long W
9 24.8 79 52.2

6 Dec 55 log 1231.64 sea + wind mild
Box #2
Box down 0933
hit bottom 0937 at 63 m



Box was cocked on deck - bottom doors cocked and then center divider was blocked up by wood block. As winch lifted box 2 men pulled inboard with short rope attached to top of box. Over with no trouble and lowered immediately.

(saves considerable time not having to cock bottom doors while hanging over side)

(Spring top hook - I can now cock bottom doors by myself)

No 2 Box
weight

Alternate type box
No 3 & 2
jig

SERIAL NO. 1591

Lat N Long W
11 23.2 77 37.1

7 Dec. 55 log 1405.20 sea + wind mild
PLK-16

1M down	0630	
½ M down	0635 ✓	
32M/min	0639	
	0642	25°L
310M out	0645	19°L
250F out	0649	
start up	0651	20°L
	0656	25°L
½ up	0705 ✓	
1 up	0715	

depth 430 M = 235 F
time 0630-0715-45 1M 0635-0705=30 ± M
angle 20°L
Vol Hrs Fil 1M 1680 M3 ½ M ~~1400~~ 20 M3 M3
Drip Vol. 26 ML 1M 19 ML ½ M
time factor 1M 1.2 ½ M 1.
1M DV/10³ M³ 15 ML
½ M DV/10³ M³ 95 ML ✓

OK

Lat N SERIAL NO. 159247
12 51.2 370 22.0

8 Dec 55 log 1524.39 sea + wind fair
PLK-17

1M down	0725	
½M down	0731 ✓	
	0733	20° L
34M/min	0734	
	0738	24° L
	0740	22° L
at depth 457M out	0742	
start up	0744	25° L
	0748	30° L
	0755	20° L
½ up	0800 ✓	
1 up	0814	

depth 415M - 22.6 F
time 0725-0814-49-1M 0731-0800-29 ½M
angle 25°L
Vol H_2O Fil. 1M 2240 m^3 ½M ~~1400 m^3~~ 20 m^3
Digl. Vol. 26 ML/1M 12 ML ½M
time factor 1M 1.6 ½M 1.
1M DV/10^3 m^3 12 ML
½M DV/10^3 m^3 60 ML

✓

OK

depth 397 M = 217 F
time 1223-1307 = 44-1M 1227-1300 = 33½ M
angle 30°L
Kol H₂O Fal. 1M 1960 m³ ½M ~~1540 m³~~ 22 m³
Disp vol. 43 ML 1M 23 ML ½M
time factor 1M 1.4 ½M 1.1
[illegible] 22 ML
½ M [illegible] 104 ML ✓

✓

1M Dd/18 m³ 28 ML
½M Dd/1.2 m³ 53 ML ✓

Lat N 14 46.0 Long W 78 [illegible]

9 Dec 55 log 1660.77 sea + wind fair
PLK-18

SERIAL NO. 1593

1M down	1223	
½M down	1227 ✓	
	1230	22°L
33M/min	1231	
	1235	22°L
	1238	25°L
	1240	30°L
250 Fath	1241	30°L
start up	1243	30°L
	1245	25°L
	1250	29°L
	1253	20°L
	1256	28°L
½ up	1300 ✓	
1 up	1307	

SERIAL NO. 1594

9 Dec 55 log 1660.77 sea + wind fair
PLK-19

Lat N 14 46.0 Long W 78° 12.0

1M down	1840	
½M down	1845 ✓	
27M/min	1847	22°L
	1849	22°L
	1852	silent ship
	1902	22°L
	1904	OK down
30M/min	1906	20°L
250 F	1912	27°L
start up	1914	
	1919	25°L
	1921	25°L
½ up	1930 ✓	
1 up	1938	

depth 407 M = 221
time 1840-1938 = 58-1M 1845-1930 = 45½ M
angle 27°L
Kol H₂O Fal 1M 2660 m³ ½M ~~2100 m³~~ 30 m³
Disp vol. 58 ML 1M 16 ML ½M
time factor 1M 1.9 ½M 1.5 ML for one up (not including 1 up)

big catch (3 barrels of [illegible])

F

3 decantations disp 6 ML (not including 1M up)

OK

Lat N 16 10.5 Long W 79 09.7

10 Dec 55 log 1775.33
Box 43

Sent box down during core operation in 680 FM of water by fathometer reading in after Gal.

680
1.83
2040
5440
680
1244.40 M

Started down at 0955 going at 68 M/min. Thought this was too fast as slack appeared when reel was toward wire. Slowed to 50 M/min. This apparently was OK.

30°L all the way down. let out 200 M more than this total wire out 1444 M

Came up about 7 surface and had to haul it 788 M out while core came in

had in operation at 1040.

Surface and no kinks. doors closed and about a spoonful of bottom –

some oxygenium + sand + foram.

(Not these pkt tins + vrp have been taken while big Buda was running – very nervous reading)

(Not releasing device knocked off when hit side of ship coming up – loose in a combat zone.)

Don says shouldn't use it again until get stronger springs + different release mech ?

Lat N — Long W
16 16.7 1790 13.9 1595

10 Dec 55 log 1775.33 (big mult.)
PLK-20

Just b/fn letting down noticed that Speedometer cable was broken again. Towed any how! approximately 30M/min for 15 minutes.

1M down 1555
½M down 1600
30M/min ?

SERIAL NO. 1595

	1603	35°L
	1605	42°L
	1609	43°L
250F	1615	45°L
start up	1619	45°L
★ 16 min 5	1624	power off & start up
2	1640	start up
½ up	—	1649
1M up	—	1653

1M range full of vermicel / checking for forward part of ship

depth 323M = 177 F
time 1555-1653 58 min 1M ½ 49 min
angle 45°L
Vol Ho Ed. 1M 2660 m³ ½M ~~2240 m³~~ 32 m³
Disp Vol. 20ML 1M ½ 44ML 1M
time factor 1M 1.9 ½M 1.6
1M D/10³M³ 7.5 ML ½M D/10³M³ 13.7 ML

✓

OK

Lat N 17 28.3 Long W 76° 21.8

13 Dec 55 log 2115.41 mild sea + wind

PLK-21

1M down	2030	
½ M down	2038 ✓	
21 F/min	2040	22°L
	2041	19°L
	2044	15°L
	2046	19°L
250 Fath	2048	18°L
	2050	20°L
	2054	17°L
	2056 ✓	20°L
½ up	2109 ✓	
1 up	2215	

NO. 1596

SERIAL

Now using new block on Davy with built in indicator, however, almost unless cam block turns to outside is slow + risky.
(It reads in M)

depth 433 M = 236

time 2030-2215 = 1145 - 1M 2038-2109 = 131 - ½M

Angle 18°L

Vol H_2O Fil 1M 4900 m³ ½M ~~4200~~ 60 m³ m³

Displ. Vol. 38 mL 1M 16 mL ½M

time factor 8 1M 3.5 ½M 3.0

8.

✓

6 mL for amphipod + tests (scalp) not included)

OK

Lat N 16 05.2 Long W 78 11.3

14 Dec 55 Log 2213.58

PLK-22

1M down	0840	
½M down	0845 ✓	
20F/min	0846	15°L
	0849	25°L
	0851	20°L
250 Fath	0853	28°L
	0855	27°L
	0858	29°L
	0901	29°L
½ in	0909 ✓	
1 up	0915	

depth 404 M = 221

time 0840-0915 = 35-1M 0845-0909 = 24-½M

angle 28°L 16 m³

Vol H₂O Fil 1M 1680 m³ ½M ~~H₂O~~ m3

Drip Vol. 36 ML 1M 12 ML ½ M

time factor 1M 1.2 ½M .8

1M Dr/1000 m3 21-ML ½M 30/1000 m3 15 ML

EBTOC-3

Time			
1220	—	300 feet of rope out	
1225	—	45M/minute	
1231	—	400M out	25°L
1237	—	690M out	25°L
1240	—	800M out	
1242	—	900M out	
1244	—	1000M out	
& 1250	—	bottom at 1335M	36°L
1256	—	1350M	32°L
1301	—	1395M	33°L
1307	—	1446M	35°L
1314	—	1480M	25°L
1326	—	1527M	36°L
1335	—	1561M	32°L
1337	—	start up —	25 all the way
1415 —		surface	

Jerking & bouncing to increase in output with bottom as depth is 9.

I call it a successful EBTOC because we got living organisms from the epi benthal, however, I am certain that at least most of the time it was on the bottom, it was up side down, reason why:

1. bottom runners were not scratched
2. mud found in release mech.
3. sand only found in top ½ meter net.
4. no sand in screen at end.
5. Release arm bent and end of it highly polished. (and was bent up away from bottom if in correct position)

However, it came up in the final closed position

organisms noted before adding formalin:

1. one small brittle star (natural size)
2. some obvious crustaceans about — large.
3. small objects about ∴ ← this large in size swimming around. (100's of them) they all sank to the bottom after adding formalin.

4— ♀ + ★ Chaetognatha

Depth 634F as indicated on Fathometer
time 1220–1415 = 1 hr. 55 min
angle 30%
Vol Wire Fd
Displ Vol

Lat N	Long W
16 59.1	79 09.9

15 Dec 55 log 2407.57 sea + wind mild

★ EBTOC 3

Made a successful EBTOC drag in 634 Fath. Procedure was quite different and results were good regardless of the comparatively shallow depth. Same procedure can be used at real depth.

Procedure:

1. 300 feet ¾ inch line was tied to EBTOC bridal.
2. 100 lb wgt fastened to end of wire.
3. Ship full stop — (Captain said there was a 1½ Knot current)
4. cock + lower 300 feet over side by hand — it trailed off to stern with help.
5. then lower wgt overside + lower wire at 40 M/min.
6. As wgt approaches estimated depth watch closely — it very clearly registered when wgt hit bottom. You now assume that EBTOC is there also.
7. Approximately every 5 minutes raise wire about 40 M and let fall again till wgt hit bottom as registered on the. This keeps minimum amount of wire on bottom and lets you know exactly where you are. (corrects for wire angle change)
8. Raise at 30–M/min?
9. Use main winch to pull in EBTOC when reach rope —

suggested by Dr

depth 415M = 226 F
2407-2448 = 41-1M 2412-2440 = 28-½ M
time 2
angle 25°L
Vol H2O Fil 1M 1960 M³ ½M ~~1260~~ 18 M³
Disp. Vol. 33 ML 1M 13 ML ½ M
time factor 1M 1.4 ½M .9

1M DV/10M³ 17 ML
½M DV/10M³ 72 ML
36

(1 specimen 3 decapods 12 ML mixed with shrimp 1M net)

half of this is shrimps from Verna
corrected should read 7 ML

Lat N 18 05.9 Long N 80° 23.0

17 Dec 55 log 2578.68 mild sea + wind
PLK-23

1M net	2407	
½ M net	2412	
32M/min		
	2415	16°L
	2419	21°L
	2421	25°L
	2423	21°L
250 F back	2427	25°L
start up	2429	20°L
	2430	20°L
	2433	24°L
	2436	26°L
½ up	2440	
1M up	2448	

SERIAL NO. 1598

17 Dec 55 log 2645.7 mild sea + wind
PLK-24

Lat N 18 13.1 Long W 79 55.9

1M down	1310	
½ M down	1314 ✓	
35M/min	1315	
	1318	25°L
	1321	18°L
	1323	22°L
-250F	1324	24°L
start up	1338	15°L
	1341	15°L
	1354	½ up ✓
	1358	1M up

depth 416 M = 227 F
time 1310-1358 = 48 min 1M 40 min ~~24 min~~ ½ M
angle 24°L
Vol H2O Fil 1M 2240 M³ ½ ~~1120~~ 16
Disp. Vol. 31 ML 1M 12 ML ½ M
time factor 1M 1.6 ½M .8
1M DV/10M³ 14 M³ ½M DV/10M³ 75 ML

✓

Lat N 18 42.8 Long W 79 43.4

18 Dec 55 log 2791.40 mild sea + wind
PLK-25

SERIAL NO. 1599

1M down	1930	
½M down	1939 ✓	
37M/min	1940	
	1941	19°C
	1943	20°C
	1945	22°C
	1947	17°C
	1949	25°C
250F	1952	25°C
start up	1954	25°C
	1959	22°C
	2001	25°C
	2004	29°C
½ up	2015 ✓	
1 up	2023	

depth 415M = 226F
time 1930-2023=53-1M 1939-2015=36-½M
angle 25°C
vol. H_2O Fil. 1M 2520 M^3 ½M ~~1680~~ 24 M^3
Digit. vol. 53ML/1M 16ML/½M
time factor 1M 1.8 ½M 1.2
1M Dy/12hr 21ML ½M Dy/12hr 66ML

V

OK

SERIAL NO. 1601

Lat N 19 04.0 Long W 80 48.0

20 Dec 55 log 2972.55 rough
PLK-27

Ship had rudder trouble so gave me about 5 hours to drag. About 3000 F deep no "Doc" aboard not in EB70c. Could probably tch too long anyhow — no want for a 1000 F PLK hybd.

1M down 1255
½M down 1307 ✓
34M/min

	1312	39°C
	1318	42°C
565M	1323	45°C
800M	1332	43°C
1010M	1338	53°C
	1342	51°C
1270M	1345	55°C
1460M	1351	56°C
1600M	1356	500°C
1830M	1404	45°C
	1422	49°C
	1500	45°C
start up	1504	51°C
	1510	52°C
1250M	1520	50°C
800M	1530	50°C
600M	1540	48°C
400M	1550	56°C
200M	1556	57°C
½ up	1603 ✓	
1 up	1613	

1M. 1M 9 min

reel in quantity + quality.

depth 1295M = 708 F beautiful mudcrab + many chaetognath ✓
time 1255-1613=4:18 1M 1307-1603=3:57 ½M
angle 45°C
Vol. H_2O Fil 1M 12040 m^3 ½M ~~11070~~ 150 m^3 m^3
Disp. Vol. 74ML/1M 18ML ½M } normal mudcrab + large chaetognath
time factor 1M 8.6 ½M 7.9

Lat N 19 04.0 Long W 80 48.4

20 Dec 55 log 2971.96 rough sea
PLK-26

SERIAL NO. 1600

1M down 0900
½M down 0914 ✓
35M/min 0915 30°C
0917 28°C
0919 25°C
0921 30°C
0924 26°C
250 Fath 0926 30°C
up 0928
0930 25°C
0936 31°C
0940 30°C
½ up 0948 ✓
1 up 0957

depth 396M = 216 F
time 0900-0957=57 1M 0914-0948=34 ½M
angle 30%
Vol H_2O Fil. 1M 2660 m^3 ½M ~~1540~~ 22 m^3 m^3
Displ. Vol. 46ML/1M 17ML ½M
time factor 1M 1.9 ½M 1.1
1M DV/$10^2 m^3$ 17ML ½M DV/$10^2 m^3$ 77ML ✓

1M DV/$10^2 m^3$? 6. ML ½M DV/$10^2 m^3$ 11 ML

Lat N Long W
19 13.1 81 23.7

21 Dec 55 Lez 3085.89 calm - light wind
RK28 off Grand Cayman

SERIAL NO. 1602

1M down	1250	
½ M down	1301	
100 M		10°L
150 M		10°L
200 M		13°L
250 M		13°L
300 M		10°L
350 M		11°L
400 M		14°L
250F = 457 M		15°L
		15
		10°
		14°
½ up	1330	
½ up	1335	

actual depth 1,625 Fath yet very close to shore (3 miles) a very poor detail as for as volume goes.

depth 430 M = 235 F
time 1250-1335: 45 1M 1301-1330: 29 ½M
angle 15°L
Vol H_2O 1M 2100 m^3 ½M ~~1400~~ 20 m^3
Displ. Vol. 5 ML 1M 8ML ½M
time factor 1M 1.5 ½M 1.5
1M Dy/10² m^3 2.4 ML ½M Dy/10² m^3 40 ML

✓

6K

Lat N 19 46.9 Long W 80 40.7

22 Dec 55 log 3162.47 calm
PLK 29

went down to 1000 F before hydrophoning operation. Stayed down until 30 minute shot intervals occurred. then started up. About 6 to 7 10 minute at depth.

1 M down 0635
½ M down 0646 ✓

1/2 M/minute	0649	10°C
400 M	0655	22°C
610 M	0700	22°C
760 M	0705	25°C
910 M	0710	35°C
1100 M	0715	35°C
1250 M	0720	38°C
1400 M	0725	40°C
1570 M	0730	43°C
# 1830 M	0738	80°C
start up	1210	18°C
1520	1220	20°C
1370 M	1225	17°C
1120 M	1230	21°C
900 M	1235	20°C
770 M	1240	20°C
stop 10 minute		shot stop
640 M	1250	20°C
500	1255	24°C
300 M	1300	20°C
150 M	1304	17°C
½ up	1308 ✓	
1 up	1315	

NO. 1603

SERIAL

depth 1401 M = 756 F
time 0635-1315=6140 1M 0646-1308=6122 ½M
angle 40°C
Vol H_2O Fil 1M 18620 M³ ½M ~~17780 M³~~ 254 M³ 1M
Geogl. Vol 34 x 1M 11 ML ½ 3 meters thick fill + 2 cubic
time factor 1M 13.3 ½M 12.7
1M Diff/M³ 1.8 234 ½ 13 ML ½M mins shot + 1 minute w/o

OK good cast

depth 434 M = 237 F
time 1430-1523:53 1M 1435-1515:40 ½M
angle 17°L
Vol H_2O Fil 1M 2520 M^3
Displ. Vol 36 ML 1M 12 ML ½M
time factor 1M 1.8 ½M 1.3
✓ 1M Dr/1.8 14ML ½M Dr/1.3 46 ML

✓

Lat N 19 13.0 Long W 79 26.2

23 Dec 55 log 3329.04 calm
PLK-30

1M down		1430	
		1435	
increased speed - no change ←		444/min	15°L
		1438	20°L
	250M	1440	17°L
	340M	1442	12°L
	★ 457M	1445	17°L
	start up	1447	17°L
	430M	stop 1448	start up
26 M^3 ½M/820 M^3	start	1506	19°L
		1511	14°L
		stop 1515	
		up 1523	

SERIAL NO. 1604

OK

23 Dec 55 log 3373.13 calm
PLK-31

Lat N 19 13.0 Long W 78° 54.7

1M down		2316	
½M down		2324 ✓	
	49M/min		
		↓	angle vertical dead calm
depth 430 M = 235 F	457M	2331	20°L
time 2316-2401:45 1M	start up	2333	17°L
angle 20°L	(2324-2355:31 ½M)	2335	17°L
Filtered 1M 2100 M^3	½ ~~400~~ 20 M^3	2339	16°L
Invert. 38 ML 1M	8 ML ½M	2343	14°L
time factor 1M 1.5	½M 1.0 ½ up	2355 ✓	
Dr/factor 18 ML	Dr/factor 40 ML	up 2401	

OK

1M net dip [illegible] OK

Lat N 19 23.3 Long W 77 14.9

24 Dec 55 Log 3491.09 calm, wind + sea
PLK-33

1M 2323
½M 2324 ✓
33M/min 2335 14°L
2339 16°L
230M 2329 26°L
310M 2331 20°L
350M 2332 21°L
410M 2333 19°L
★ 250F 2335 31°L
start up 2337 32°L Spring tight
2340 30°L
2343 29°L
1M 2345 22°L
½ up 2350 ✓
1 up 2358

OK

getting for the point that
a transparent object
with solid dark colored
center piece - more -
½M for (½M not)

depth 392M - 212 F
time 2323-2358:35-1M 2334-2350:16-½M
angle 31°L
Vol H2O Est 1M 1680M³ ½M ~~700M³~~ 10M³
Disp Vol 27ML 1M 26ML ½M
time factor 1M 1.2 ½M .5
1M DO/1000M³ 16ML ~~DO/1000M³ 26ML~~

✓

31M
310 ½ ~~★~~ 10²M³ 160 (pot rubber + cephalopod)
10²M³ 150 minus rubber + cephalopod
310 (combined)

OK

Lat N 19 10.6 Long W 77 56.2

24 Dec 55 Log 3434.88 calm no light wind
PLK-32

1M down 1219
½M down 1226 ✓
55M out stop at 1227 without stop
360M/min 1235 15°L
290M 1240 15°L
360M 1244 10°L
★ 250F 457M 1247 18°L
stop 1249 18°L
360M 1252 24°L
280M 1259 27°L
160M 1256 25°L
without stop
150M 1306 19°L

rope wire not wrapped in small
½ cable which was at depth
on 6:19. Not usual check in rope
[illegible] A [illegible]
then took up in hopes [illegible]
Pulled not in at A [illegible]
[illegible]

½ out 1340 ✓
1M out 1345

OK

lift out on chart house

depth 433M = 236 F
time 1219-1345:126-1M 1226-1340:114-½M
angle 18°L
Vol H2O Est 1M 4060M³ ½M ~~3540M³~~ 50M³
Disp Vol 36ML 1M 12ML ½M
time factor 1M 2.9 ½ 2.5
1M DO/1000M³ 6ML ½DO/1000M³ 24ML

✓

OK

Lat. N 19 14.0 Long W 76 51.2

25 Dec 55 Log 3551.00
PLK-34

1M down 1200 ✓
½M down 1207 ✓

30M/min	1210	27°L
150M	1211	27°L
200M	1213	30°L
240M	1214	35°L
280M	1216	38°L
320M	1217	40°L
360M	1219	36°L
400M	1220	38°L
stop at 457	1223	wire to ship 48°L
down	1246	46°L
570M	1249	47°L
700M	1253	43°L
47M/min	1254	43°L
500F ← 914M	1258	43°L
	1351	40°L
600M	1400	46°L
460M	1404	45°L
stop		wire to ship
	1415	40°L
270M	1421	40°L
100M	1425	41°L
½ up	1430 ✓	
1 up	1437	

ok

depth 669M = 365F
time 1200-1437-2:37-1M 1207-1430-2:23-½M
angle 43°L 96 m³
ml H₂O Fil. 1M 7430M³ ½M ~~6720~~
Sp. Vol. 29ML 1M 29ML ½M
time factor 1M 5.3 ½ 4.8
ΣDY/10²M³ 11ML ½DY/10²M³ 28ML

✓

ok

SERIAL NO. 1607

Lat N 19 37.5 Long W 76° 18.0 1608 77

26 Dec 55 log 3669.13 fair wind mild sea
PLK-35 about 8 miles from shore
over 3000 F deep

1M down 0955
½M down 1000 ✓
32M/min

	1004	17°L	
	1005	19°L	
★ 50M/min	1007	23°L	
370M	1010	27°L	
600M	1015	30°L	
740M	1017	31°L	
437F ← stop 200M	1019	31°L	silent ship. also caught in hydrophone wire. Must come up.
18min { start up	1037	27°L	
460M	1045	31°L	
300M	1049	27°L	
200M	1051	29°L	
100M	1057	29°L	stop for silent ship
up	1102		
½ up	1105 ✓		
1 up	1110		

OK

No apparent damage at 50 m/min. (come up slowly.

depth 686M = 375 F
time 0955-1110-1:15-1M 1000-1105-1:05-½M
angle 31°L 44 m3
Vol. H_2O Fill 1M 3500 m3 ½M ~~3080~~ m3
Displ. Vol. 40ML 1M 19ML ½M
time factor 1M 2.5 ½M 2.2
1M Displac 11ML ½ displac 43ML

V

attempted to make a 1000 F dive but hydrophones failed. Things up.

settled for 437 Fed

ok

Lat N 19 49.6 Long W 75° 56.8

27 Dec 55 log 3755.58 deck calm 12 miles from land.
PLK-36

1M down	0145		
½M down	0150 ✓		
50M/min	0154	28°L	still forward movement
450M	0159	25°L	
	0205	20°L	
1000M	0212	0°L	
1000F 1830M	0232	0°L	
start up	0252	0°L	
1500M	0300	0°L	
1000M	0310	0°L	
650M	0320	0°L	
200M	0326	0°L	
½ up	0330 ✓		
1 up	0340		

depth 1830M = 1000 F
time 0145-0340-1:55-1M 0150-0330=1:40 ½M
angle 0°L
Vol H2O Fil. 1M 5330 ½M ~~3700~~ .66 m3
Digl. Vol. 32 ml 1M 21 ml ½M
time factor 1M 3.8 ½M 3.3
1M DV/10³M³ 7 ml ½M 24/10³M³ 32 ml

O/C + interesting looking org

range in film of transport fuller.

SERIAL No. 1610

OK

Lat N 18 24.0 Long W 75 11.0

31 Dec 55 Log 3881.35
PhK-37

1M down	0410	
½ M down	0415 ✓	
44M/min	0417	
	0419	21°L
	0420	21°L
	0422	26°L
250 F	0424	25°L
Stop	0426	
	0428	30°L
	0430	29°L
	0432	30°L
	0434	31°L
½ up	0437 ✓	
1 up	0442	

SERIAL NO. 1611

OK

depth 415M = 227 F
time 0410-0442=32 0415-0437=22
angle 25°L 14M3
vol H2O Fil. 1M 1550 M³ ½M 480 M³
Disp Vol 35ML/M 9ML/½M
time factor 1M 1.1 ½ .7 ✓
4D/M³ M³ 23ML ½ DV/D² M³ 64 ML
10% Disp. minimum fill =

OK

1966 / .007 / 14.0 / 120

7° / 49.0

1400 / 1.4

1.4 / 1400 / 560 / 14000 / 1700

1.4 / 1400 / 560 / 14 / 700

depth 379 m = 207 F
time 0100-0139:39-1M
angle 34°L
Vol H2O Fil. 1M 1820 m³
Digit. vol 42ML1M 17ML½M
time factor 1M 1.3 ½M 1.0
1M 24/100m³ 25 ml ½D 6m³ 21 ml

Lat N 17 33.9 Long W 73° 22.1

1 Jan 56 log 4031.73
PLK-38

SERIAL NO. 1612

1M down	1454	
½M down	1456 ✓	
42M/min	1458	
	1459	30°L forward
240M	1500	0°L
360M	1504	20°L
457M	1508	39°L
start up	1510	40°L
	1513	42°L
300M	1515	39°L
190M	1524	26°L
½ up	1533 ✓	
1 up	1537	

depth 355 m = 194 F
time 1454-1537=43-1M 1456-1533=37
angle 39°L
Vol H2O fil. 1M 1960 m³ ½M ~~1680 m³~~ 24 m³
Digit vol. 14ML1M 6ML½M
time factor 1M 1.4 ½ 1.2
1M 24/100m³ 7ML ½M 24/100m³ 25 ML
2 ml = 1 mb/m 70%

ship rolling heavily. Additional untill taking sample for net and lost 70% of 1M sample.

2 Jan 56 log 4082.51
PLK-39

heavy roll
Lat N 17 31.5 Long W 72° 31.6

1M down	0100	
½M down	0104 ✓	
26M/min		
	0107	24°L
	0110	27°L
	0113	23°L
250F	0119	34°L
start up	0121	
	0124	37°L
	0126	40°L
0109-0135=31-½M 200M	0130	35°L
20 m³ 100M	0132	30°L
½M ~~1400 m³~~ ½ up	0135 ✓	
1 up	0139	DK

+ one small insect in ½M net (halobiid)?

one min blank field with luminescence (deep sea blank field?)

SERIAL NO. 1612

depth 351M = F192
time 1922-2012:50-1M
angle 40°L
vol H.O fil 1M 2380M³
displ. vol 58ML-1M 9ML
time factor 1M 1.7 ½ 1.4

2380 / 1000 = 11 / x

2380) 11000 (4.6
9520
1480
1428
52

DV/10M³ 1M 58 ml DV/10M³ ½ 19ml time factor 1M 4.9 ½M 4.8

Lat N 17 46.0 Long W 70 05.0

3 Jan log - strong wind + heavy sea
PLK-40

1M down	1922		
½M down	1925 ✓		
40M/min	1927		
	1928	25°L	
200M	1930	35°L	
280M	1932	31°L	
	1933	42°L	
250F	1936	40°L	
up	1938	38°L	
350M	1942	40°L	
250M	1944	40°L	
	1946	40°L	
	1952	silent ship	
start up	2005		
½ up	2008 ✓		
1 up	2012		OK

1922-2008=43-½M
28M³
½M-1560M³

SERIAL NO. 1614

5 Jan log 941.68 moderate condition
PLK-41

1M	0936		
½M	0938 ✓		
46M/min	0939		
165M	0940	12°L	
200M	0941	15°L	
255M	0943	16°L	
310M	0944	20°L	
370M	0945	16°L	
250F	0947	18°L	
☆ start up	1153	17°L	
260M	1157	24°L	
stop	1152	silent ship	
start	1205	14°L	
½ up	1211 ✓	OK	
1 up	1214	OK	

Lat N 19 10.9 Long W 67 06.0

SERIAL NO. 1609F

strange fish

depth 436M = 238F
time 0936-1214=2:28-1M 0938-1211=2:33-½M
angle 18°L
vol H.O fil 6850M³ ½M 6930M³ 96M³
displ vol 45ML-1M 18ML-½M

OK ✓

	1M	½M
time factor	3.0	2.7
✓ 1M DV/10³m³	6ml	½M 28ml

Lat N	Long W
20 32.5	64 52.0

7 Jan 56 log 4714.15 heavy seas + strong wind
PLK 42

1M down	1849		
½M down	1854 ✓		rolling badly - cause slack in wire - looped around drum apparently welcome a long - no damage!!!
	1910		
34M/min	1912		
	1913	20°L	vapes to vertical with roll
218M	1913.5	15°L	relent ship
34/min	1948	start down	25-15°L
250F	1958	24°L	
	2000	start up	
	2004	29°L	
½ up	2014 ✓		
1 up	2018	0°L	

NO. 1615 SERIAL

Depth	418M = 228F	
Time	1849 - 2018 = 1:29 - 1M	1854 - 2014 = 1:21 - ½M
Angle	24°L	54 M³
Vol. H2O Fil	1M 4200 M³	½M ~~3780~~ M³
Displ Vol	25ML 1M	15ML ½M

8 Jan 56 log 4754.76

Lat N	Long W
19 57.1	65 07.5

PLK 43

1 down		0440	
½ down		0445	
43M/min		0450	
		0453	0-15°L
	980	0500	8-15°L
500F	915M	0514	8-15°L
		0530	8-15 start up
		0533	0-15°L
	½ up	0540	
	1 up	0545	OK

	1M	½M
Depth	723M = 395F	
Time	0440 - 0545 = 1:05 - 1M	0445 - 0540 = 55 min - ½M
Angle	8-15°L → 11°L	36 M³
Vol. H2O Fil.	1M 3080 M³	½M ~~2520~~ M³
Displ Vol.	36ML 1M	12ML ½M
Time factor	2.2	½M 1.8
DV/10³m³	12ml	DV 10³m³ 33ml

OK

14-41 N, 66-03 W

9 Jan 56 log 4811.58 big wells - no wind
PLK-44

1M down	2401	
½ m down	2403 ✓	
34M/min	2405	
	2406	25°C
145 M	2407	27°C
190 M	2408	27°C
250 M	2410	40°C
320 M	2412	32°C
415 M	2414	33°C
250 Fath	2416	37°C
	2418	
	2422	32°C
300 M	2425	30°C
230 M	2429	30°C
½ up	2440 ✓	—
1 up	2444	—

SERIAL NO. 1616.

OK

	1 M	½ M
Depth	365 M = 199.5 F	
time	2401 - 2444 = 43 min - 1M	2403 - 2440 = 37 - ½M
angle	39°C	
Vol. H_2O Fil.	2000 M^3 1M	24 M^3 ± 1680 M^3
Displ vol.	36 ML/M	13 ML ½ M
Time factor	1.4	1.2
$DV/10^3 M^2$	18 ml.	54 ml.

1M dip seemin engage tremble

1000F — 30 minutes at depth (or more)
500F — " or shorter
250F — 2 minutes

1. Make Most hauls at 250F (437M)
2. Occassionally take deep haul - 1000 Fath (1830m)
3. EBTOC only on smooth flat bottom - at any depth with reason. remember your wire is only so long. (? ask Karry)
4. Formaldahyde immediately.
5. Do not raise or lower nets faster than 40 Meters/minute — nets may blow out and more important force of water through nets may damage organisms. ✱
6. [illegible] to fill out info. pad to place in

TIME REACHES MAX.

1000F — 30 minutes at depth (or more)
500F — " or shorter
250F — 2 minutes

1. Make Mort haul at 250F (437m)
2. Occassionally take deep haul - 1000 Fath (1830m)
3. EBTOC only on smooth flat bottom - at any depth with reason. remember your wire is only so long. (? ask Karry)
4. Formaldahyde immediately.
5. Do not raise or lower nets faster than 40 Meters/minute — nets may blow out and more important force of water through nets may damage organisms. ☆
6. Remember to fill out info. pad to place in sample jar.
7. Record data on succeeding pages after each haul as follows:

date log description of wind + sea
PLK - no.

1m down time
½m down "
m/min time
depth time angle
↓
250 F two minutes "
stand up
↓
½ m out time
1 m out time

60°L
danger
stop

SAMPLE

V8

PLANKTON HAUL #44

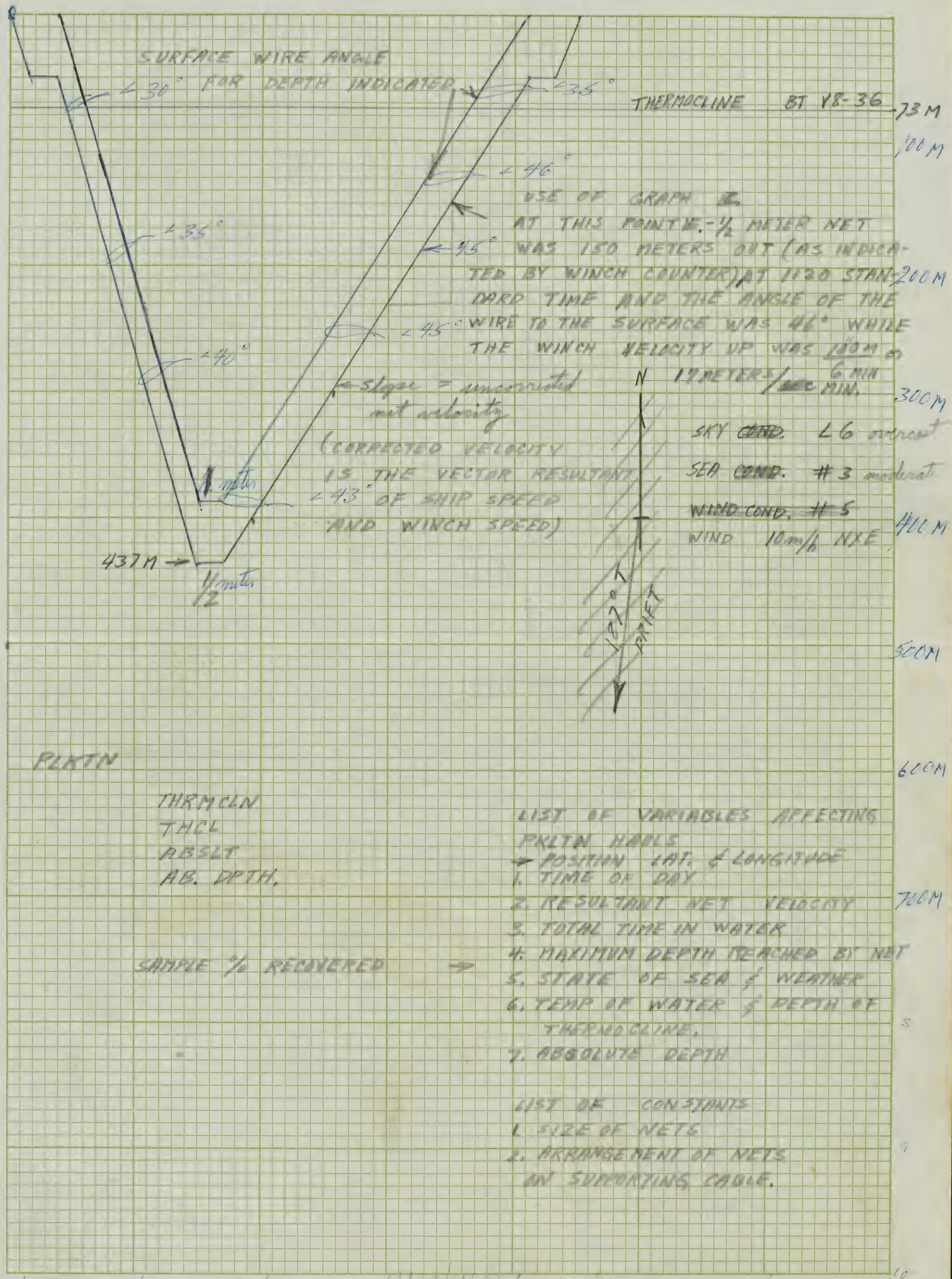
DATE	1 Jan 56	1 Jan 56
~~LATITUDE~~	— Log 7503.14	Log 7503.14
~~LONGITUDE~~	—	BT V8-36
DIRECTION DRIFT	187° T	
SPEED	~~1 kt/hr.~~	
NET SIZE & TYPE	1/2 meter & 1 meter [ETOB - 1/2 meter]	
SKY CONDITION	overcast, raining, gusts to 20 m/h, sea 5 foot waves	
TIME NETS IN	~~1130~~ 1045	
TIME REACHES MAX. DEPTH	1100 1100	
MAX. DEPTH	250 meters	
TIME LEAVES MAX. DEPTH	1102	
TOTAL TIME AT MAX. DEPTH	0002	
TIME NET OUT	~~1145~~ 1130	
TOTAL TIME	0045	
REMARKS	VEMA rolling thru 60° arc during entire haul.	
OBSERVATIONS ON HAUL	95% of sample, [larva ulo, larva + mature schrimp, ——, —— & ——]	

TO BOB M., BOB E., AND JACK,

PLANKTON HAUL

DATE	NOTE: DUE TO A VERY RIGID SAILING
LATITUDE	SCHEDUAL THE VEMA WAS UNABLE TO
LONGITUDE	STOP TO PERMIT PLANKTON HAULS. FOR
DIRECTION	THIS UNFORTUNATE TURN OF CIRCUMSTANCES
SPEED	I OFFER MY EARNEST REGRETS AS I KNOW
NET SIZE & TYPE	OBTAINING SAMPLES OF THE EQUATORIAL
SKY CONDITION	DRIFT PLANKTON MENT A LOT TO YOU— ALSO
TIME NET IN	I HAD TRULY LOOKED FORWARD TO DOING THIS
TIME REACHES MAX. DEPTH	WORK FOR YOU, THERE BY SUPPLEMENTING MY
MAX. DEPTH	BOOK KNOWLEDGE.
TIME LEAVES MAX. DEPTH	IT WAS A PLEASURE TO HAVE WORKED
TOTAL TIME AT MAX. DEPTH	WITH YOU.
TIME NET OUT	Best Wayne Grossman
TOTAL TIME	
REMARKS	
OBSERVATIONS ON HAUL	

1 Jan 56 PLK V8-44 SAMPLE



$$\text{Time factor} = \frac{\text{hour time mins.}}{30 \text{ mins.}}$$

Due to low wire angles on the time measurements of X.5 or .66 was used to determine the amount of water filtered. That is, it is estimated that the time filter .66 times as much water as the standard rate for with a 45 mm 6.

$\therefore$ Volume of water filtered = time factor $\times .66 \times 70 M^3 \times 30$
= time factor $\times 1400 M^3$

This estimate will have to be checked when current meters are available.

% Month filtered = 114 ÷ 7 =

% Month rate filtered = Time factor [illegible] = [illegible] =

Vema - 8 One-half Meter Plankton Samples

Plankton Sample No.	Location Latitude N	Longitude W	Depth of Tow in meters	Volume of water filtered (in m^3)	Actual Total Plankton Sample Displacement Volume (in ml.)	Displacement Volume per 1000 m^3
1	20° 01.4'	70° 39.9'	0-185	335	16	47.7
2			0-230	150	14	93.5
3	17° 5.0'	68° 59.0'	0-1230	1620	36	22.2
4	------- No 1/2 m. tow		----------			
5.	------- No 1/2 m. tow		----------			
6	16° 36.2'	72° 09.6'	0-330	252	16	63.5
7	15° 45.4'	72° 45.0'	0-850	500	13	26.0
8	15° 9.5'	73° 25.8'	0-210	301	10	33.2
9	------- 1/2 net lost		----------			
10	11° 54.7'	75° 42.6'	0-365	229	16	70.0
11	11° 32.6'	75° 54.5'	0-380	168	18	107.0
12	11° 33.9'	75° 43.3'	0-380	210	15	71.5
13	12° 23.3'	77° 45.5'	0-390	204	10	49.1
14	11° 16.8	79° 13.1'	0-405	173	6	34.7
15	9° 34.4'	79° 46.4'	0-2	(15 min. tow)		
16	11° 23.2'	77° 37.1'	0-400	210	19	90.5
17	12° 51.2'	77° 22.0'	0-380	226	12	53.1
18	14° 46.0'	78° 09.3'	0-365	280	23	82.2
19	14° 46.0'	78° 12.0'	0-375	368	16	43.6
20	16° 16.7'	79° 13.9'	0-300	510	20	39.3
21	17° 28.3	76° 21.8'	0-400	610	16	26.3
22	16° 05.2'	76° 11.3'	0-370	199	12	60.0
23	18° 05.9'	80° 23.0'	0-380	218	7	32.1
24	18° 13.1'	79° 33.9'	0-380	308	12	39.0
25	18° 42.8'	79° 43.4'	0-380	280	16	57.2
26	19° 04.0'	80° 47.4'	0-365	290	17	58.6
27	19° 04.0	81° 48.0'	0-1270	2460	18	4.9
28	19° 13.1'	81° 23.7'	0-410	180	8	44.5
29	19° 46.9'	80° 40.7'	0-1370	3820	11	2.9
30	19° 13.0'	79° 26.2'	0-400	260	12	46.3
31	19° 13.0'	78° 54.7'	0-400	217	8	36.8
32	19° 10.6'	77° 56.2'	0-400	495	12	24.3
33	19° 23.3'	77° 14.9'	0-360	138	26	188.0
34	19° 14.0'	76° 51.2'	0-670	1460	27	18.5
35	19° 37.5'	76° 18.0'	0-690	560	19	34.0
36	19° 49.6'	75° 36.8'	0-1830	915	21	23.0
37	18° 24.0'	75° 11.0'	0-385	170	9	52.9
38	17° 33.9'	73° 22.1'	0-330	360	6	16.7
39	17° 31.5'	72° 31.6'	0-350	280	17	60.8
40	17° 46.0'	70° 05.0'	0-325	430	9	21.0
41	19° 10.9'	67° 06.0'	0-400	1020	18	17.7
42	20° 32.5'	64° 52.0'	0-385	620	15	24.2
43	19° 57.1	65° 07.5'	0-860	300	12	39.6
44			0-340	320	13	40.7

Vema - 8 One-half Meter Plankton Samples

Plankton Sample No.	Location Latitude N	Location Longitude W	Depth of Tow in meters	Volume of water filtered (in m^3)	Actual Total Plankton Sample Displacement Volume (in ml.)	Displacement Volume per 1000 m^3
1	20° 01.4'	70° 39.9'	0-185	335	16	47.7
2			0-230	150	14	93.5
3	17° 5.0'	68° 59.0'	0-1230	1620	36	22.2
4	------- No 1/2 m. tow		----------			
5.	------- No 1/2 m. tow		----------			
6	16° 36.2'	72° 09.6'	0-330	252	16	63.5
7	15° 45.4'	72° 45.0'	0-850	500	13	26.0
8	15° 9.5'	73° 25.8'	0-210	301	10	33.2
9	------- 1/2 net lost		----------			
10	11° 54.7'	75° 42.6'	0-365	229	16	70.0
11	11° 32.6'	75° 54.5'	0-380	168	18	107.0
12	11° 33.9'	75° 43.3'	0-380	210	15	71.5
13	12° 23.3'	77° 45.5'	0-390	204	10	49.1
14	11° 16.8	79° 13.1'	0-405	173	6	34.7
15	9° 34.4'	79° 46.4'	0-2	(15 min. tow)		
16	11° 23.2'	77° 37.1'	0-400	210	19	90.5
17	12° 51.2'	77° 22.0'	0-380	226	12	53.1
18	14° 46.0'	78° 09.3'	0-365	280	23	82.2
19	14° 46.0'	78° 12.0'	0-375	368	16	43.6
20	16° 16.7'	79° 13.9'	0-300	510	20	39.3
21	17° 28.3	76° 21.8'	0-400	610	16	26.3
22	16° 05.2'	76° 11.3'	0-370	199	12	60.0
23	18° 05.9'	80° 23.0'	0-380	218	7	32.1
24	18° 13.1'	79° 33.9'	0-380	308	12	39.0
25	18° 42.8'	79° 43.4'	0-380	280	16	57.2
26	19° 04.0'	80° 47.4'	0-365	290	17	58.6
27	19° 04.0	81° 48.0'	0-1270	2460	18	4.9
28	19° 13.1'	81° 23.7'	0-410	180	8	44.5
29	19° 46.9'	80° 40.7'	0-1370	3820	11	2.9
30	19° 13.0'	79° 26.2'	0-400	260	12	46.3
31	19° 13.0'	78° 54.7'	0-400	217	8	36.8
32	19° 10.6'	77° 56.2'	0-400	495	12	24.3
33	19° 23.3'	77° 14.9'	0-360	138	26	188.0
34	19° 14.0'	76° 51.2'	0-670	1460	27	18.5
35	19° 37.5'	76° 18.0'	0-690	560	19	34.0
36	19° 49.6'	75° 36.8'	0-1830	915	21	23.0
37	18° 24.0'	75° 11.0'	0-385	170	9	52.9
38	17° 33.9'	73° 22.1'	0-330	360	6	16.7
39	17° 31.5'	72° 31.6'	0-350	280	17	60.8
40	17° 46.0'	70° 05.0'	0-325	430	9	21.0
41	19° 10.9'	67° 06.0'	0-400	1020	18	17.7
42	20° 32.5'	64° 52.0'	0-385	620	15	24.2
43	19° 57.1	65° 07.5'	0-860	300	12	39.6
44			0-340	320	13	40.7

Vema - 8 One Meter Plankton Samples

Plankton Sample No.	Location Latitude N	Longitude W	Depth of Tow in meters	Volume of water filtered (in m^3)	Actual Total Plankton Sample Displacement Volume (in ml)	Displacement Volume per 1000 m^3
1	20° 1.4'	70° 39.9'		1040	18	17.3
2						
3	No 1 M samples					
4						
5	17° 5.8'	71° 37.0'		1960	40	20.4
6	16° 36.2'	72° 09.6'		1600	44	27.5
7	15° 44.4'	72° 49.0'		4040	31	7.6
8	15° 9.5'	73° 25.8'		1760	44	25.0
9	14° 22.6'	14° 11.4'		1360	37	27.2
10	11° 54.7'	75° 42.6'		1440	38	26.4
11	11° 32.6'	75° 54.5'		1440	24	16.7
12	11° 33.9'	75° 43.3'		1640	72	43.9
13	12° 23.3'	77° 45.5'		1600	28	17.5
14	11° 16.8'	79° 13.1'		1600	22	13.8
15	No 1 M sample					
16	11° 23.2'	77° 37.1		1800	26	14.4
17	12° 51.2'	77° 22.0'		1960	26	13.2
18	14° 46.0'	78° 09.3'		1760	43	24.4
19	14° 46.0'	78° 12.0'		2320	58	25.0
20	16° 16.7'	79° 13.9'		2320	44	18.9
21	17° 28.3'	76° 21.8		4200	38	9.0
22	16° 05.2'	76° 11.3'		1400	36	25.7
23	18° 05.9'	80° 23.0'		1640	33	20.1
24	18° 13.1'	79° 33.9'		4320	31	7.2
25	18° 42.8	79° 43.4'		2120	53	25.0
26	19° 04.0'	80° 47.4'		2280	46	20.2
27	19° 04.0'	80° 48.0'		7920	74	9.3
28	19° 13.1'	81° 23.7'		1800	5	2.7
29	19° 46.9'	80° 40.7'		16000	34	21.2
30	19° 13.0'	79° 26.2'		2120	36	16.9
31	19° 13.0	78° 54.7'		1680	38	22.6
32	19° 10.6'	77° 56.2'		3440	26	7.6
33	19° 23.3'	77° 14.9'		1440	27	18.7
34	19° 14.0'	76° 51.2'		6280	79	12.6
35	19° 37.5'	76° 18.0'		3000	40	13.3
36	19° 49.6'	75° 36.8'		4600	38	8.5
37	18° 24.0'	75° 11.0'		1280	35	27.4
38	17° 33.9'	73° 22.1'		1720	14	8.1
39	17° 31.5'	72° 31.6'		1560	47	30.1
40	17° 46.0'	70° 05.0'		2000	58	29.0
41	19° 10.9'	67° 06.0'		6320	40	6.3
42	20° 32.5'	64° 52.0'		3560	25	7.0
43	19° 57.1'	65° 07.5		2600	36	13.8
44	19° 41.0'	66° 03.0'		1720	36	20.9